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95th Congress
2d Session

COMMITTEE PRINT

COMMITTEE PRINT 95-62

ECONOMIC ANALYSIS

OF

H.R. 5289

NATURAL GAS POLICY ACT OF 1978

PREPARED BY THE STAFF

OF THE

SUBCOMMITTEE ON ENERGY AND POWER

COMMITTEE ON

INTERSTATE AND FOREIGN COMMERCE

U.S. HOUSE OF REPRESENTATIVES

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ECONOMIC ANALYSIS OF H.R. 5289, NATURAL GAS POLICY ACT OF 1978

Summary

The Natural Gas Policy Act of 1978 alters the present system of cost-based controls on the wellhead price of natural gas sold in interstate commerce to a statutory price control formula applicable to both interstate and intrastate sales. Under the statutory formula, the price of new natural gas will rise from $2.06 per million Btu's today to about $3.70 per million Btu's at year-end 1984. On January 1, 1985, this gas would no longer be subject to price controls, although provision is made for expedited review and reimposition of controls by the Congress if decontrolled prices rise unacceptably. The price of presently-regulated flowing gas would remain regulated indefinitely.

Because of the strong interest of both the Congress and the public in comparing the effects of the Natural Gas Policy Act with the effects of continuing the present system of wellhead price controls, the staff of the Subcommittee on Energy and Power has developed the following analysis. Specifically addressed are the impacts of the Natural Gas Policy Act versus the status quo upon major areas of interest, including:

1. New Natural Gas Prices,
2. Producer Revenues,
3. Natural Gas Supplies,
4. Residential Prices,
5. Industrial Prices, and
6. Aggregate Economic Costs and Benefits.

The basic conclusion of this analysis is that while natural gas prices may be higher under this legislation than under continuation of the status quo, natural gas supplies will also be greater. Increased supplies are attributable both to the enhanced price certainty afforded producers and to the focusing of higher prices onto those categories of gas that have the greatest prospect of supply response. Based on the very conservative assumption that, under the status quo, the Federal Energy Regulatory Commission would not raise gas prices above the current price of $1.50 per million Btu's in real terms, domestic producer revenues will be cumulatively $23 billion greater than under the status quo by 1985. However, $14 billion of this $23 billion are attributable to additional production that would not be forthcoming under the status quo. The estimated 6 trillion cubic feet of cumulative additional production through 1985 will reduce imported oil requirements and will reduce the balance of payments deficit by a cumulative $22 billion.

These findings lead to the overall conclusion that the net effect of the Natural Gas Policy Act will be to reduce the transfer of income from U.S. consumers to foreign energy producers by an amount pro-

jected to be virtually equal to the increased income transfer from consumers to domestic producers. Considerable domestic economic and employment stimulus would result from the increased flow of dollars within the U.S. economic system. A net income transfer to domestic producers may also serve to increase overall Treasury receipts, thereby producing a positive budgetary impact. This balance of payments improvement would, presumably, also contribute meaningfully to a strengthening of the U.S. dollar on international money markets.

Economic Analysis

The conference agreement on natural gas pricing[1] reflects the view that energy pricing policy must be established in the context of established national economic objectives. It is recognized that a primary responsibility of Government is to assure that economic health is maintained and improved, that unemployment rates are reduced, and that inflationary pressures are minimized. Energy policy as well as other governmental programs must be pursued in a manner consistent with the goal of economic stabilization.

While recognizing the need to avoid disruptive changes in energy prices, including the price of natural gas, it is apparent that the present dual market system of natural gas pricing, including cost-based regulation of the interstate market, is no longer tenable. The artificial distinction which presently exists between the interstate and intrastate markets must be eliminated. Therefore, the central issue before the conferees during consideration of this natural gas pricing policy was the quesion of whether market equalization should occur through deregulation of the interstate market, as in the Senate bill, or through regulation of the intrastate market as in the House bill.

The conference agreement combines both approaches. Wellhead price regulation is extended to intrastate markets for the next seven years in order to permit an orderly transition of both interstate and intrastate markets to deregulation in 1985. The price of new natural gas from capital-intensive high-cost wells is regulated for 1 year only, while most previously discovered gas, for which little additional economic incentive is required to encourage continued production, remains regulated indefinitely.

Because of the strong interest of both the Congress and the public in comparing the effects of the conference agreement with the effects of continuing the present system of natural gas pricing, the staff of the Subcommittee on Energy and Power has developed a computer model to help provide such a comparative analysis.

In a previous analysis,[2] the model was also used to compare the effects of the Senate-passed deregulation bill [3] with the effects of the natural gas pricing policy adopted by the House.[4] Several findings of that previous analysis are reproduced in the following analysis so that the full array of legislative options, including no new legislation, may be examined.

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[1] The Natural Gas Policy Act of 1978, S. Rept. 95-1126, 1978.
[2] Economic Analysis of Natural Gas Policy Alternatives, Committee Print, Subcommittee on Energy and Power, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, December, 1977.
[3] The Natural Gas Act Amendments of 1977, H.R. 5289, as approved by the Senate on Oct. 4, 1977.
[4] Part 4 of H.R. 8444, the National Energy Act, as approved by the House of Representatives, Aug. 5, 1977.

The following analysis of natural gas policy alternatives is divided into six sections corresponding to major areas of impact. The first section calculates maximum lawful new gas prices under the conference agreement and the House bill, and also contains estimates of new gas prices under the status quo and the Senate deregulation bill. Prices under each policy are translated into relative producer revenue impacts in the second section. A third section reviews potential natural gas supply and distribution impacts. These first three sections are the basis for model calculations of average residential and industrial prices in sections four and five. Aggregate economic impacts, including balance of payments and inflationary impacts, are addressed in section six. Finally, an explanation of the computer model used in this analysis appears as a technical appendix.

1. New natural gas prices

The model specifies different prices for new natural gas, based upon differences in the conference agreement, the status quo, the Senate-approved bill, and the House-approved bill. Nominal (inflated) new gas prices for each alternative are given in table 1 below.

TABLE 1.—NEW GAS CEILING PRICES [1]

	Conference agreement	Status quo (base case)		House bill	Senate bill
		Interstate	Intrastate		
1978	1.99	1.50	1.82	1.87	2.84
1979	2.21	1.59	1.93	2.04	3.79
1980	2.42	1.69	2.04	2.24	4.73
1981	2.65	1.79	2.17	2.44	4.64
1982	2.91	1.89	2.30	2.65	4.58
1983	3.19	2.01	2.44	2.87	4.53
1984	3.50	2.13	2.58	3.11	4.50
1985	3.86	2.26	2.74	3.36	4.48

[1] Price per million Btu's in nominal dollars as of midyear for each year. Assumes 6 percent per year inflation. Prices are exclusive of gathering or processing adjustments and severance taxes or other fees.

CONFERENCE AGREEMENT

Under the conference agreement, the new gas price [5] is established at $1.75 per million Btu's beginning on April 20, 1977. This price increases with (1) the GNP deflator, plus (2) .2 percentage points, plus (3) 3.5 percentage points through April 20, 1981, or 4 percentage points from April 21, 1981 through December 31, 1984. Assuming that new gas prices after decontrol on January 1, 1985, remain on the trend line established prior to decontrol, the price in mid-1985 would be $3.86 per Mcf.

STATUS QUO

Under a continuation of the status quo, this analysis assumes that interstate and intrastate new gas prices, which are presently $1.50 and $1.82 per Mcf respectively, on average, will increase solely with inflation. This assumption is very conservative. These assumed constant real prices are viewed to be considerably lower than would likely occur under a continuation of current law, and were chosen

[5] Wherever new gas prices under the conference agreement or the House bill are referred to in this analysis, they refer to ceiling prices.

solely for analytical purposes. Under these conservative assumptions reflected in the analysis, consumer costs and producer revenue impacts exceed by a considerable margin the range reasonably expected to occur.

Rather than increasing solely with inflation, the price of unregulated intrastate natural gas is likely to increase at a rate considerably greater than inflation under the status quo. The near-term substitute for natural gas in the intrastate market is either distillate oil (No. 2 fuel oil) or residual oil (No. 6 fuel oil). Over time, new or expanding users in the intrastate market are likely to bid up the price of uncommitted and new natural gas to a level equal to—if not greater than—the price of these substitute fuels.

The Department of Energy projections for the industrial price of No. 2 fuel oil show the price increasing from about $2.85 per million Btu's in 1975 to $5.50 in 1985. For residual fuel oil, DOE projects price will increase from $2.26 to $4.50. Based upon these figures, and recognizing that intrastate natural gas transportation costs to industrial users average well under 50 cents per Mcf, it is not unreasonable to anticipate that the wellhead price in 1985 for new and renegotiated intrastate contracts would be in the $4 to $5 range under current law, far greater than the $2.74 assumption used in this analysis.

It is also likely that the price of regulated interstate natural gas will increase faster than the general rate of inflation. In an effort to analyze the impact of these interstate and intrastate prices rising in real terms under the status quo, a "higher price base case" has been estimated and referenced at several points throughout the analysis.

HOUSE BILL

New natural gas prices under the House-passed bill were established at Btu equivalence with the refiner acquisition cost of domestically produced crude oil. For purposes of this analysis, the present crude oil pricing policy is projected to continue through 1985 under the assumption that statutory price control authority established by the Emergency Petroleum Allocation Act (as amended) will be extended. Under the House-approved bill, the price of new gas in mid-1985 would reach approximately $3.36 per Mcf.

[SENATE BILL

New natural gas prices under the Senate deregulation bill are computed in the staff's model according to a formula that calculates the price that pipelines will be willing to pay for volumes of unregulated gas such that the average price of natural gas delivered to low priority customers seeks to achieve Btu equivalence with No. 2 fuel oil shortly after 1985. This formulation results in new gas prices rising very quickly, to $4.73 per Mcf in 1980 and then dropping slowly during the next several years to a price of $4.48 per Mcf in 1985, after which prices would escalate with the general inflation rate. Prices are highest when unregulated gas represents only a small fraction of pipeline supplies. They drop to equivalence with substitute fuels as the percentage of unregulated pipeline supply increases. This projected disorderly price path under sudden deregulation is the main reason

why the conference committee ultimately adopted a mechanism consisting of intrastate controls and moderate price escalation to prepare the natural gas system for eventual decontrol.

Many economists not familiar with the details of the United States natural gas system have advocated sudden decontrol as a solution to the problems of inadequate overall supply and inequitable distribution. They argue that deregulated natural gas prices, like the price of any commodity in short supply, will rise along an orderly path until supply/demand equilibrium is established. However, these classical economic analyses should be discounted as they rely upon assumptions that are not applicable to the United States natural gas system.

In a normal commodity market, the purchaser has a capability and an incentive to shop for the lowest price available among competing suppliers. However, in the nxtural gas industry the interests of a pipeline are by no means the same as the interests of its final customers. If a pipeline's rates (the price per Mcf it is permitted to charge) are established by its regulatory commission, the pipeline maximizes its revenues by maximizing throughout. The more gas delivered to its customers, the greater the pipeline's return. Thus, the immediate objective of pipeline management is to maximize deliveries. A pipeline short of gas suffers both lost revenues and the prospective loss of future industrial customers who choose not to run the economic risks of curtailment. The countervailing risk of paying too high a price for additional gas supplies is less immediate, because it will be many years before newly purchased natural gas will comprise a significant portion of the pipeline's overall gas supplies. Often, the risk of paying too high a price for today's supply additions is presumed to be deferred safely to future management.

It appears clear, therefore, that pipeline regulation creates the incentive for pipelines to bid as high a price as is necessary in the short run to gain the desired share of additional gas volumes. These are not the kind of incentives that one would expect to find in a perfectly competitive market, and for this reason they are ignored by most economists. Unfortunately, these very real incentives frame much of the debate over the pending natural gas legislation and are central considerations for any relevant analysis of natural gas policy. Those economic analyses that have assumed perfect competition also assumed away the very problems that are central to a viable natural gas pricing policy.

2. Producer revenues

Projected impacts on producer revenues are an important factor in assessing the relative costs of alternative compromise approaches between the House and Senate-approved bills. An economically sound and equitable natural gas policy must seek to minimize any potential net income transfer from consumer to producers resulting from higher natural gas prices. In attempting to focus price increases onto those categories of gas for which the supply response is greatest, the authors of the agreement seek to increase domestic natural gas supplies and reduce impoarte energy requirements. In this manner, much of the actual income transfer resulting from the proposed legislation will be from OPEC to domestic natural gas producers.

The object of the conference agreement is therefore not to minimize overall domestic producer revenues but rather to minimize the income transfer from domestic consumers while maximizing the income transfer from foreign energy producers. In order to keep this important distinction in focus, the following estimates of aggregate producer revenue impacts flowing from different pricing policies have been calculated without regard to the changes in potential supplies resulting from those policies. Supply impacts of different policies are discussed in the next section, and are also fundamental to the section dealing with aggregate economic impacts, including balance of payments. But in this section, producer revenue impacts of each pricing policy are calculated on the basis of future production expected to occur under a continuation of the status quo. The following discussion therefore deals with the amount by which producer revenues will increase or decrease solely as a consequence of the price impacts of alternative policies.

Conference Agreement Versus Status Quo

Producer revenues between 1977 and 1985 under the conference agreement could be anywhere from $9 billion more to about $15 billion less than under a continuation of present law.[6] This range is attributable to the lack of certainty with respect to natural gas prices under the status quo. If, for example, maximum prices remain at $1.50 for interstate gas and $1.82 for intrastate gas in real terms, the conference agreement would result in higher prices, and $9 billion higher producer revenues, than current law. On the other hand, under the more reasonable assumption of rising real prices under the status quo, the conference agreement would not result in significantly higher prices and could actually operate to limit producer revenues through 1985. For domestic producers, this $9 billion represents a 6 percent increase over estimated revenues of $148 billion between 1977 and 1985 under the status quo.

HOUSE-APPROVED BILL

Comparative producer revenue estimates between the conference agreement and the status quo were derived by first comparing each of these two policies with the House bill. The conference agreement would result in producer revenues that are roughly $23 billion more than would result from the House bill through 1985. A detailed breakout of the producer revenue differences between the House bill and the conference agreement appears in the following table. Previous calculations by both the staff of the Subcommittee on Energy and Power and the Department of Energy found that the House bill, as compared with the status quo, would reduce producer revenues by a total of at least $14 billion through 1985. The reduction in producer revenues under the House bill is attributable primarily to provisions in the bill that freeze the price of most existing and rollover intrastate contracts. Present law permits nearly all existing and rollover intrastate contracts to escalate to whatever price the market will bear. This more restrictive treatment under the House bill is virtually certain to reduce intrastate producer revenues relative to their expectations under the status quo.

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[6] When referred to in this section, all aggregate producer revenue impacts are expressed in terms of constant 1977 dollars.

Comparison of producer revenue impacts of the conference agreement, relative to the increase over House bill, 1977

	Billion
I. New and unregulated gas:	
A. New gas price and escalator	+$3. 1
B. High cost gas	+1. 5
C. Stripper	+1. 8
D. State royalty production	+. 5
II. New gas definition:	
A. Special developmental incentive wells:	
(a) 1978–84	+1. 9
(b) 1985	+1. 6
B. Nonproducing reservoirs onshore	+. 9
C. New reservoirs in old leases offshore	+1. 5
III. Existing intrastate contracts:	
A. Treatment of price escalators	+4. 6–8. 0
B. No rollback of interim contracts	+1. 3
IV. Intrastate rollovers: A. Minimum $1 price	+2. 7
Total	21. 4–24. 8
Midpoint	23. 0
Producer revenue increase relative to current controls [1]	7. 4–10. 8
Midpoint	9. 0

[1] Assuming constant real interstate and intrastate prices. Producer revenue increases would be less if prices rise in real terms under the status quo.

If producer revenues are estimated to be $23 billion more under the conference agreement than under the House bill, and if revenues under the status quo are estimated to be at least $14 billion more than under the House bill, then the conference agreement would increase producer revenues over the status quo by at most $9 billion through 1985.

SENATE-PASSED BILL

The Senate-passed deregulation bill has been previously estimated by the staff of the Subcommittee on Energy and Power to increase producer revenues by anywhere from $60 billion to about $75 billion over the House bill through the period 1977–1985. The lower end of this range corresponds to the case in which the Senate bill's incremental pricing mechanism provides a restraining influence on the price that pipelines are willing to pay for unregulated natural gas. On the other hand, the higher end of the range corresponds to the case in which incremental pricing in the Senate bill is presumed to have no significant influence on pipeline bidding practices. For reasons discussed more fully in the residential price section below, the latter case, in which the intended price restraining effect of incremental pricing is not achieved, appears most applicable to the Senate deregulation bill.

Relative to the Energy and Power staff's high range estimate ($75 billion) of additional producer revenues under the Senate bill, the conference agreement represents about $52 billion less in producer revenues than would result from the original Senate position.

A summary of producer revenue impacts of the House bill, the Senate bill, and the conference agreement, each relative to a continuation of status quo, appears in figure 1.

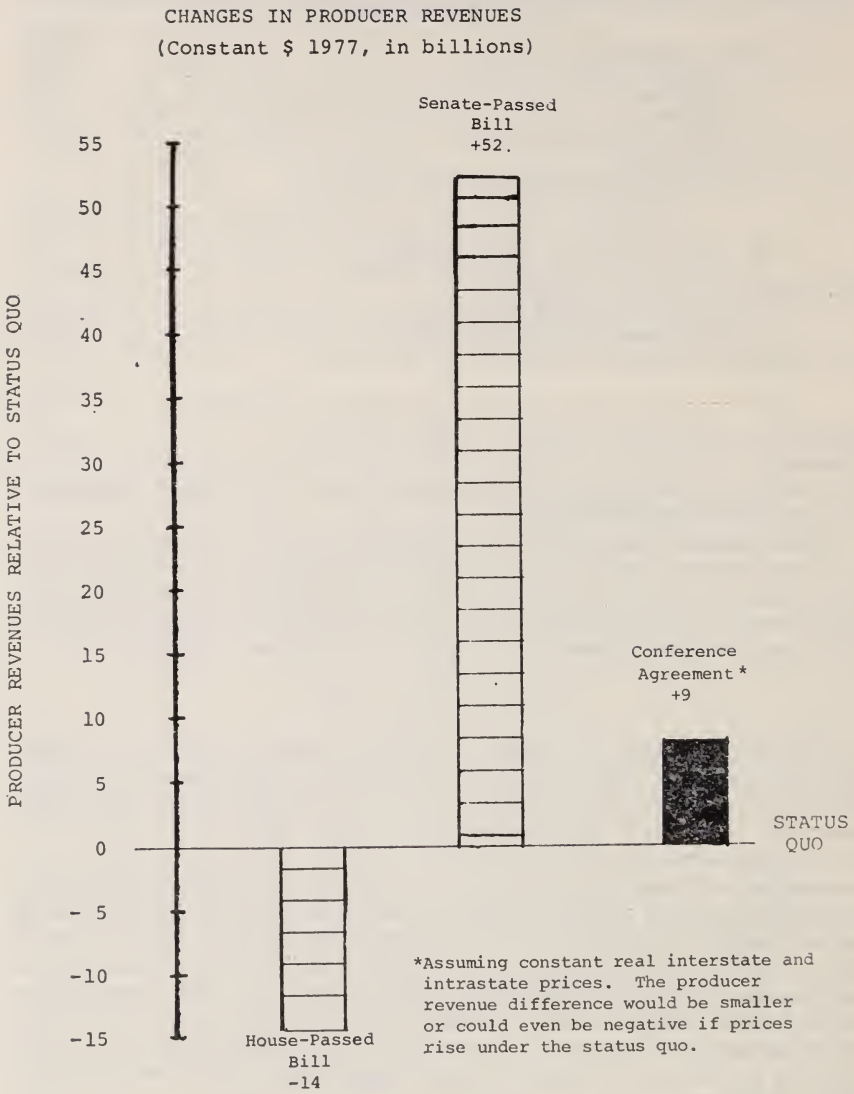

FIGURE 1

3. Natural gas supplies

Along with their desire to minimize the consumer costs of natural gas pricing policies, the conferees attempted to focus producer incentives onto those categories of natural gas where increased discovery and production appear most feasible.

There are only two comprehensive natural gas policy alternatives before the Congress at present. One policy is a continuation of present law. The other policy is the proposed agreement. The relevant issue relating to natural gas supplies is therefore whether the conference agreement will increase supplies beyond the level expected to be pro-

duced under the status quo. This issue is the principal focus of the following discussion of natural gas supplies. A qualitative analysis of the relative supply consequences of the Senate deregulation bill and the House bill is also contained in this section.

CONFERENCE AGREEMENT VERSUS STATUS QUO

Relative to a continuation of the status quo, the conference agreement has the potential for eliciting substantial additional gas supplies over the long run. This is because the conference agreement establishes higher prices on most categories of gas and concentrates the greatest price increases on those categories of gas where the potential for increasing supplies is the greatest.

The present system does not contain a proper focusing of incentives. For example, today's pricing system provides the same incentive for relatively low risk and low cost developmental drilling in previously discovered reservoirs as is provided for high risk exploration drilling in new fields. In 1976, nearly half of all extension (developmental) drilling was successful, whereas only one-sixth of all new field wildcat wells were successful. Recognizing the fundamentally greater costs an risks of new field exploration, many producers have taken advantage of the incentives for old reservoir development and are depleting known reserves far faster than they are finding new reserves. Against 20 Tcf of net domestic production in 1976, reserve additions were only 7.5 Tcf, of which two-thirds (or 5.3 Tcf) were merely extensions of known reservoirs.

The conference agreement is a departure from the present system in that it provides, over the next ten years, a higher incentive price for finding and producing from newly discovered reservoirs than from existing rescrvoirs. The greater reward for new discoveries is expected to result in an increase in total gas supplies.

In addition to providing price incentives on newly discovered gas, upon implementation of the first incremental pricing rule one year after date of enactment, the agreement deregulates gas produced from new wells from a completion location deeper than 15,000 feet. This category of high-cost deep natural gas has considerable potential for increasing domestic supplies over the next several years. In 1976, production from these wells was .854 Tcf, or about 5 percent of total production. Over the period 1973–75, nearly 9 percent of total on-shore reserve additions were discovered below 15,000 feet. Deep production is therefore already meeting a growing share of total demand. It can reasonably be expected that the near term deregulation of this high-cost gas under the agreement will yield significant additional supplies. Less certain but potentially large supply additions may also occur from other high cost categories of natural gas, such as from Devonian shale or geopressurized brine. These categories, along with gas from coal seams, are deregulated one year after date of enactment.

A potential near-term benefit of the conference agreement is that it eliminates the economic incentive to withhold gas that may exist under the present system. In recent years, producers have faced considerable uncertainty regarding the possibility of deregulation. The anticipation of higher prices under deregulation provides an incentive to a producer to withhold gas under the expectation that, if he commits his gas to contract prior to resolution of congressional debate over

deregulation, his gas would not qualify as deregulated new gas under any legislation that deregulates only gas which was discovered or committed to contract after the date of enactment. The certain and relatively stable price path established under the agreement, plus the lack of vintaging, removes most if not all of the present economic reasons for a producer to defer or withhold his gas from the marketplace.

In addition to increasing supplies relative to the status quo, the agreement would alter the distribution of gas between the interstate and the intrastate market. Because the agreement removes the present disparity between prices in these two markets, a greater proportion of new gas will be sold in the interstate market and a lesser proportion will be sold in the intrastate market under the agreement than would be the case under the status quo. Estimated interstate and intrastate volumes are given in table 2.

Under the status quo, the amount of gas available under long-term interstate contracts is projected to decline from 10.7 Tcf in 1978 to 7.8 Tcf in 1985. The decline in production from acreage presently committed to interstate pipelines is expected to exceed the rate of new jurisdictional sales so that total jurisdictional sales will decline by an estimated 27 percent between now and 1985 under status quo. The Department of Energy's Energy Information Administration projects a slightly faster (34 percent) decline in interstate sales to 7.3 Tcf in 1985.[7]

Interstate sales volumes in table 2 under the status quo also contains a column referred to as "nonjurisdictional sales". These are primarily emergency 60-day pipeline purchases and direct industrial purchases transported but not purchased by interstate pipelines. These nonjurisdictional sales are generally priced at prevailing intrastate levels, and are not subject to just and reasonable price determinations under the Natural Gas Act. As the volume of jurisdictional sales declines, the pressure for volumes of nonjurisdictional sales will almost certainly increase. Table 2 therefore contains the projection that the volume of gas moving in interstate commerce at unregulated intrastate prices will increase from 0.2 Tcf at present to 0.5 Tcf in 1985. Many conferees regard this predictable market trend with deep concern, not only because it is essentially a circumvention of the Natural Gas Act, but also because it directly raises consumer prices. By providing intrastate pipelines and producers a means of selling surplus gas without becoming subject to the Natural Gas Act, the present intrastate surplus may move interstate, thereby tightening the intrastate market and leading to higher unregulated prices. In this particular respect, the present system is viewed as the worst of all possible worlds; increasing amounts of high-priced gas are moving on a short-term basis to interstate consumers, thereby removing any pressure on producers to commit their surplus or new production to long-term interstate contracts.

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[7] Energy Information Administration, Annual Report to Congress, vol. II, 1977, p. 166.

TABLE 2.—DOMESTIC MARKETED PRODUCTION

[Trillion cubic feet]

	Interstate			Intrastate		Total	
	Status quo						
	Jurisdictional sales	Nonjurisdictional sales	Tentative agreement	Status quo	Tentative agreement	Status quo	Tentative agreement
1978	10.7	0.2	10.9	6.8	6.6	17.5	17.5
1979	10.3	.2	10.8	6.8	6.5	17.1	17.3
1980	9.9	.3	10.7	6.8	6.5	16.8	17.2
1981	9.5	.3	10.6	6.9	6.5	16.5	17.1
1982	9.1	.3	10.5	6.9	6.5	16.1	17.0
1983	8.7	.4	10.4	6.9	6.5	15.8	16.9
1984	8.2	.4	10.2	7.0	6.6	15.5	16.8
1985	7.8	.5	10.0	7.0	6.6	15.2	16.6

The figures used in table 2 reflect "net marketed production", or the amount that the pipelines purchase from processing plants. This figure does not include natural gas imports or Alaskan gas, but does include pipeline uses and losses as well as amounts finally delivered to consumers. It should be noted that estimates of production revenues based upon net marketed production will understate the absolute amount of producer revenues, because the producer also receives payment for gas that is used in the field or is used by a processing plant to convert supplies to pipeline quality. Such uses are not included in data on the amount of gas considered as net marketed production. However, since only comparative revenues are used in this analysis, any underestimation of absolute producer revenues should not affect the amount by which producer revenues under one policy differ from revenues under another policy.

The total gas volume estimates under the agreement used in the above table reflect a cumulative production increase over the status quo of about 6 Tcf between 1978 and 1985. This production response results from a projected increase in reserve additions of 3 Tcf per year, which yields an increase in annual production that grows from zero in 1978 to slightly less than 10 percent of production (1.4 Tcf) by 1985. If a more conservative supply response of 3 Tcf between 1978 and 1985 is assumed, total domestic production is estimated to be about 15.9 Tcf by 1985, an increase of 5 percent over the status quo.

Another likely effect of the agreement would be to encourage the production of domestic gas supplies and discourage the use of imported LNG. Under the present system, because prices in the interstate market are kept artificially low, the high price of imported LNG can be averaged, or "rolled in," with lower priced domestic supplies, while keeping delivered natural gas prices at or below the price of competing fuels. Present law thereby shields users of imported gas from its higher costs by having all gas consumers share that cost.

The agreement, with its higher prices for domestic supplies and incremental pricing, creates a less favorable environment for pipelines to pursue their plans to import higher cost LNG. Thus, the agreement

directly discourages reliance on foreign sources of natural gas, resulting from the effective subsidy created by the present price control system.

SENATE BILL

Although producer revenues under the Senate-passed bill would have exceeded those under the agreement by $52 billion between now and 1985, the Senate-passed bill would have resulted in only a slight increase, if any, in reserve additions and production.

The primary reason for the lack of additional expected supplies is that a large part of the increased revenues under the Senate-passed bill would have been attributable to significant increases in unregulated prices for old intrastate gas. The Senate deregulation bill would have left all gas that is presently unregulated, including previously discovered intrastate gas, free from price controls. There is little expectation that any increases in production would result from higher prices for this category of gas.

A second factor contributing to the view that production would not be considerably increased by the Senate bill is that for those categories of gas where the potential for increased production is greatest, the conference agreement provides incentive prices that are comparable to incentive prices under the Senate-passed bill. Analysis of both bills indicates that in 1984 the new gas price under the Senate-passed bill would exceed that under the agreement by only about 60 cents per Mcf in constant dollars. And in 1985 new gas would no longer be subject to price controls under either bill. Thus, over the long term, the incentive price under the Senate bill is the same as under the agreement. Between now and 1985, any supply response due to higher prices under the Senate bill are expected to be minimal. The Senate-passed bill would result in higher new gas prices in the short term, but, because major exploration and drilling investment decisions are based on long-term rather than short-term price expectations, the higher short-term prices under the Senate bill are not expected to elicit a supply response significantly greater than would result from the agreement. In addition, as discussed above, even over the short run the agreement deregulates several categories of high cost gas, including gas produced from new wells from a completion location deeper than 15,000 feet. For these categories of high cost gas, the agreement provides price incentives that are identical to those of the Senate bill.

Lastly, although the Senate bill provides higher deregulated prices for all new offshore gas sooner than under the agreement, the conferees believe that offshore production is at least as sensitive to leasing policy as it is to pricing policy. The higher prices allowed under the Senate bill for new offshore gas could not be expected to elicit any meaningful additions to total domestic natural gas supply, unless new leases were made available more rapidly than has been the past practice.

HOUSE BILL

Because of the higher prices allowed under the agreement relative to the House-passed bill for those categories of gas with a potential for increasing supplies, it is expected that production under the agree-

ment will be significantly higher than it would have been under the House bill. The conferees believe that production under the House bill would have been close to that under the status quo, even though producer revenues would be significantly lower under the House bill than under the status quo. This is because the House bill would have reduced prices on old gas, where little impact on production would result, but allowed new gas prices comparable to those under the status quo.

4. Residential prices

Conference Agreement Versus Status Quo

Under the conference agreement, incremental pricing will retard the rate of increase in the average price of gas to interstate residential customers so that between now and 1983 the price will rise at a rate nearly identical to the rate of residential price increases under continued Federal regulation of interstate sales for resale. After 1983, when incrementally priced industrial customers have reached the spillover price, residential prices will rise to levels somewhat higher under the conference agreement than under present law. The average interstate residential price under the conference agreement is expected to rise from today's level of about $2.50 per Mcf to about $4.80 per Mcf (nominal dollars) in 1985. The residential price in 1985 under continued regulation would rise to roughly $4.70 per Mcf under the low-price base case assumptions. This 10 cents per Mcf difference in 1985 would amount to about $13 per year in an average interstate residential customer's fuel bill.

However, this potentially higher direct cost of gas to residential customers must be taken in context. Increased availability of natural gas to interstate pipelines will permit an expansion of residential interstate consumption. New residential customers will benefit from the agreement by avoiding higher cost alternative energy forms. Reduced use of fuel oil and electricity will result in aggregate savings to the interstate residential consumer sector beyond those reflected in the above direct cost comparison. Also, under the higher price base case, a small reduction in residential consumer costs would occur.

In addition, residential interstate prices under the conference agreement would be reduced by 20 cents per Mcf in 1985 if the second incremental pricing rule required to be developed by the Federal Energy Regulatory Commission is accepted by the Congress. The reduction in residential fuel bills would average about $25 in 1985. The second rule would broaden the category of incrementally priced interstate industrial users, thereby postponing the date on which incrementally priced users reach spillover and begin to state increased costs with residential customers.

The average intrastate residential price is expected to grow under the conference agreement from the present average of $1.80 per Mcf to $3.80 in 1985. Under the status quo base case, intrastate residential prices in 1985 are forecast to be about $3.45 per Mcf. The added cost in 1985, relative to the status quo, would be about $30 per year for intrastate residential customers.

Under the higher price base case, intrastate residential prices in 1985 are projected to be about $4.75 per Mcf. The reduced cost in 1985 to residential consumers under this case would be about $100 per year. Consequently, the impact of the conference agreement on intrastate residential consumers could be slightly negative, but the more probable result is slightly lower prices than would be the case under the status quo.

HOUSE BILL

Under the House bill, average residential prices would grow approximately at the rate of inflation through 1985, which is a slower rate of growth than under either the conference agreement or under a continuation of present law. In 1985, interstate residential prices would be about $4 per Mcf under the House bill. Intrastate residential prices under the House bill would be roughly $3 per Mcf.

Lower residential prices under the House bill are attributable to its incremental pricing mechanism. The House bill called for increases in natural gas prices to be borne initially by a broadly defined group of low priority users until the price of natural gas delivered to those low priority users reaches the price of substitute fuels (distillate, or No. 2, fuel oil). Through 1985, however, the delivered price to incrementally priced low priority users under the House bill is forecast to remain below the distillate equivalent price. Hence, no significant increase in the real price of natural gas to interstate or intrastate residential customers would be anticipated under the House bill until after 1985.

Residential prices are higher in 1985 under the conference agreement than under the House bill not only because the conference agreement establishes higher maximum lawful prices, but also because of differences in the incremental pricing mechanisms contained in the two programs. Incremental pricing in the conference agreement applies only to interstate markets, whereas the House bill would have applied incremental pricing to intrastate markets as well. This is the major reason why intrastate residential customers would pay higher rates under the conference agreement ($3.80 per Mcf) than under the House bill ($3 per Mcf). Another significant difference is that only natural gas selling for more than $1.48 per million Btu's is incrementally priced under the conference agreement, whereas the House bill incrementally priced any real increase in a pipeline's natural gas acquisition costs. As a consequence, all natural gas that increases in price but which remains below $1.48 per Mcf does not get incrementally priced under the conference agreement, but would be incrementally priced under the House bill. This difference means that interstate residential customers are not as sheltered from price increases under the conference agreement as under the House bill.

Finally, the number of incrementally priced low priority users is smaller under the conference agreement. Aside from the fact that incremental pricing under the conference agreement applies only to interstate customers, the conference agreement requires that only large industrial boiler fuel customers be incrementally priced. The House bill, on the other hand, required virtually all low priority

customers, including electric utilities and industrial process and feedstock users, to bear incremental prices. The broader pool of users, incrementally priced under the House bill causes the spillover price to be reached later than under the conference agreement. The combination of higher wellhead prices and a smaller pool of incrementally priced users under the conference agreement results in higher 1985 residential prices than under the House bill.

SENATE BILL

The incremental pricing provision of the Senate bill is an amendment to the Natural Gas Act. As such, the provision is subject to the jurisdictional limitations of that act. Under section 1(b) of the Natural Gas Act, the authority of the Federal Energy Regulatory Commission is limited to the rates and charges of interstate pipelines and does not extend to the rates of local distribution companies. It is the local distribution companies which actually supply residential consumers, as well as the majority of the industrial users of natural gas. Thus, although the Senate bill does require a segregation of low cost and high cost gas supplies at the pipeline level, the bill permits a local distribution company to roll the segregated prices of its gas supplies together before passing its costs on to residential and industrial consumers. Because the incremental pricing mechanism of the Senate bill applies only to interstate pipelines and not to their distribution companies, it is ineffective as a means of preventing wellhead price increases to be "rolled in" and thereby borne by residential users.

Given the history of regulation of local distribution companies at the State level and considering the economic and regional competition issues involved, in view of the absence of a mechanism in the Senate bill to prevent rolled-in pricing at the local distribution company level it is reasonable to assume present State regulatory practices, under which rolled-in pricing is the general rule, would continue following enactment of the Senate bill.

Both the House bill and conference compromise are radically different from the Senate bill in this respect. The House bill and the conference compromise prescribe detailed mechanisms which apply the incremental pricing requirements of each to local distribution companies as well as to pipelines. Under each, the pass through of higher prices to low priority users flows through to the burner tip.

The Senate bill would cause average pipeline acquisition costs of natural gas to reach approximately $4 per Mcf in 1985, more than $1 per Mcf higher than the average pipeline acquisition cost under the conference agreement. Assuming that local distribution companies choose to roll in rather than pass through incremental charges to low priority customers, the resulting price to interstate residential customers would be in the range of $6 per Mcf in 1985. The price to intrastate residential customers would be somewhat lower, about $5 per Mcf, due to the lower transportation costs in intrastate markets.

A summary of the increased residential prices that would result under the agreement, the status quo, and the House and Senate bills, appears in figure 2.

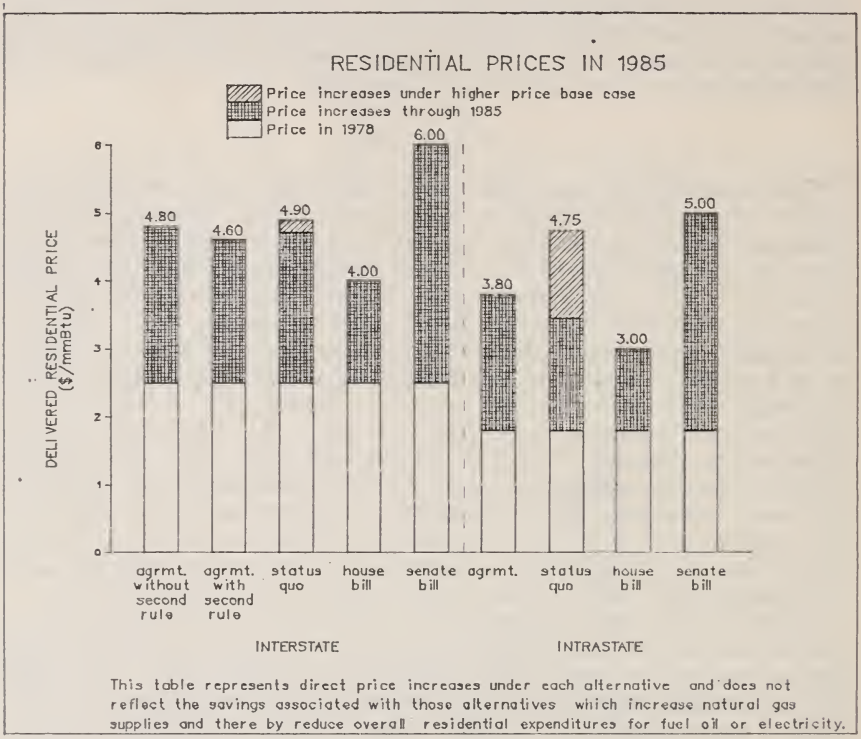

FIGURE 2

5. Industrial Prices

Conference Agreement Versus Status Quo

Incrementally priced interstate boiler fuel customers, who represent approximately 1.1 to 1.2 Tcf (or about 10 percent) of interstate demand, will experience rapidly escalating delivered natural gas costs under the conference agreement. If the second incremental pricing rule does not take effect, the price to such customers will increase from $1.40 per Mcf today to about $4.50 per Mcf in 1983, at which point the average interstate boiler fuel customer will reach the spillover-(alternative fuel) price. Beyond 1983, the cost of gas to most incrementally priced industrial customers will rise slightly above the projected price of No. 2 fuel oil to a level of about $5.60 per million Btu's in 1985. The cost of gas to any incrementally priced user granted a reduction in its alternative fuel price would rise to slightly above the price of No. 6 fuel oil, projected to be $4.50 per million Btu's in 1985.

Under the status quo, these users would pay approximately $2.70 per Mcf in 1985.

If the second incremental pricing rule is rejected by Congress, the price of gas to non-incrementally priced interstate industrial and utility customers will grow considerably less rapidly than to incrementally priced boiler fuel users. The cost to non-incrementally priced users is expected to rise from $1.40 to about $3 per Mcf.

If the second incremental pricing rule is adopted, as much as 5 Tcf of interstate demand would be required to share the effects of incremental pricing. Such sharing would work to the benefit of large boiler fuel users subject to the first rule, whose price in 1985 would be about $4 per Mcf under the second rule as compared with more than $5.50 per Mcf if only the first rule is in effect through 1985. The price to non-incrementally priced customers, including residential customers, will be lower in 1985 if the second incremental pricing rule is adopted, because the spillover price is not expected to be reached under the second rule until after 1985. The benefit of the second incremental pricing rule to non-incrementally priced interstate users in 1985 is estimated to be about 20 cents per Mcf.

Intrastate industrial prices under the conference agreement are forecast to grow from $1.40 to about $3.30 per Mcf in 1985; under the status quo, these prices would be about $2.90 by 1985. Under the higher price base case, these prices would be about $4.25 in 1985.

SENATE BILL

Average interstate industrial prices under the Senate deregulation bill are projected to be about $4.70 per Mcf in 1985. The price to interstate industrial users would be considerably higher than this figure if incremental pricing in the Senate bill is assumed to flow through to the burner tip rather than being rolled in at the distribution company level. In the intrastate market, industrial prices would be slightly lower, about $4.45 per Mcf, due to lower transportation charges and the absence of incremental pricing.

HOUSE BILL

Under the House bill, which would apply incremental pricing to intrastate as well as interstate industrial users, the price to such users in 1985 would be about $5.20 per Mcf. This high price shows that industrial customers would have borne virtually all of the increase in pipeline acquisition costs under the House bill. The conference agreement incrementally prices only that portion of an interstate pipeline's acquisition cost of new, special developmental, intrastate rollover, or LNG gas supplies which exceed $1.48 per million Btu's. The size of a pipeline's incremental passthrough account would be smaller under the conference agreement than under the House bill. And if borne by a broad class of users under the second incremental pricing rule, incrementally priced users under the conference agreement would pay at least $1 per Mcf less than under the House bill in 1985.

A summary of increases in industrial prices resulting from the agreement, the status quo, and the House and Senate bills appears in figure 3.

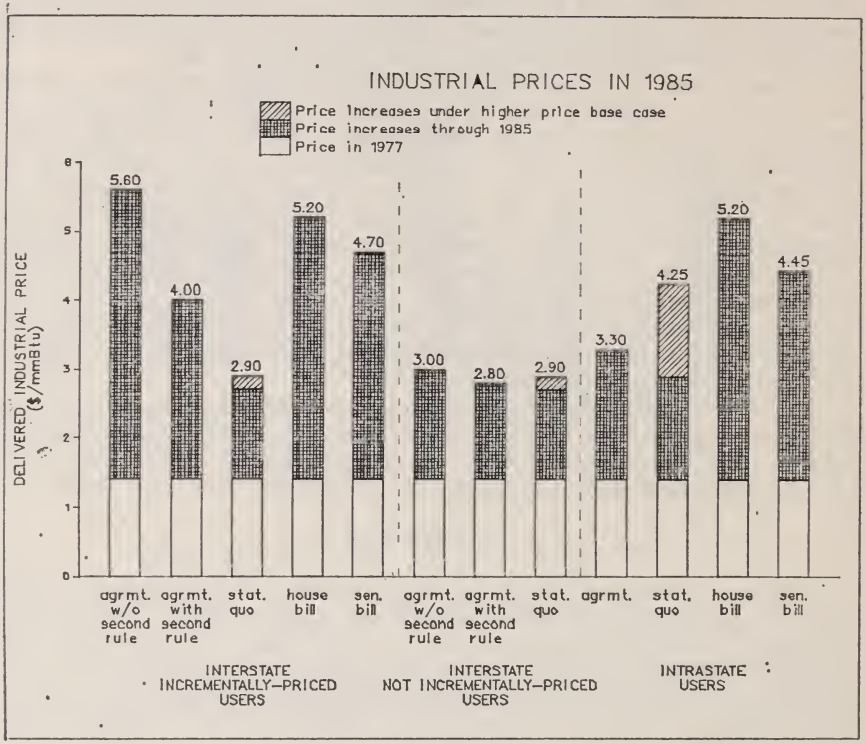

FIGURE 3

6. Aggregate economic costs and benefits

The relative economic costs and benefits of any natural gas pricing policy cannot be evaluated solely on the basis of domestic producer revenue impacts or increases in delivered natural gas prices. The impact on the overall economy is a function of both price and supply. Different policies, to the extent that they result in different volumes of domestic gas production, will also result in different requirements for imported energy. A significant supply response for natural gas would permit the United States to meet its conventional energy needs with correspondingly diminished reliance on imported oil and natural gas. This analysis assumes that any additional domestic natural gas production, relative to the status quo, resulting from the conference agreement would displace substitute imported fuels that would otherwise cost, on average, 10 percent more than the price of No. 2 fuel oil.

Projections contained in the section dealing with natural gas supplies indicate that the conference agreement will result in a significant increase in total domestic natural gas production relative to the status quo. Marketed domestic natural gas production in 1985 is projected

to be as much as 1.4 Tcf greater under the conference agreement than under the status quo. This incremental production is equivalent to about 700,000 barrels per day of imported oil, nearly 10 percent of our current oil import level. If the 6 Tcf of total additional production between now and 1985 detailed in the above supply response section is actually produced, a significant reduction in payments for imported energy supplies will occur. In 1985 alone, a 700,000 barrel per day reduction in imported energy would improve the U.S. balance-of-payments position by more than $4 billion.

As compared to the status quo base case, domestic gas producers are projected to receive approximately $14 billion more between now and 1985 for the additional production stimulated by the conference agreement as well as $9 billion in additional revenues for status quo production. The combination of higher prices and increased supplies arising from the agreement are therefore estimated to raise total domestic producer revenues by about $23 billion over the status quo base case between now and 1985. However, the increase in domestic natural gas supply will displace approximately $22 billion in imported and other high-cost energy requirements that would be consumed in the absence of increased domestic natural gas production under the conference agreement. The additional revenues to producers under the agreement and the additional costs to consumers, if any, are not identical. The reduction in substitute fuel costs must be subtracted from gross domestic producer revenue gains in order to assess the net aggregate impact on U.S. consumers.

Thus, during the period from now through 1985, consumers would pay $23 billion more to domestic gas producers under the conference agreement as compared to the status quo base case. However, they would also pay nearly $22 billion less to foreign sources for heating oil, liquefied natural gas, and imported natural gas, so that the overall net cost to consumers of the tentative agreement would be only about $1 billion between now and 1985. If a less optimistic 3 Tcf supply response is assumed, the import credit would also be lower so that the net economic cost of the conference agreement would be closer to $5 billion.

These findings lead to the overall conclusion that the net effect of the conference agreement will be to reduce the transfer of income from United States consumers to foreign energy producers by an amount projected to be virtually equal to the increased income transfer from consumers to domestic producers. Although not explicitly factored into this analysis, considerable domestic economic and employment stimulus would result from the increased flow of dollars within the United States economic system. A net income transfer to domestic producers may also serve to increase overall Treasury receipts, thereby producing a positive budgetary impact. This balance of payments improvement would, presumably, also contribute meaningfully to a strengthening of the United States dollar on international money markets.

And if, as argued at the outset of this analysis, producer revenues would increase by considerably less than $23 billion, the net impact on consumers and on inflation could well prove to be positive. Under the higher price assumption of rising real prices under the status quo,

the net benefits to consumers between now and 1985 would be $15 billion.

Even the $1 billion and $5 billion cost of the conference agreement associated with the "worst case" assumptions is far below the threshold of what is generally considered a major inflationary action. Over the next 7 years, the cumulative Gross National Product will exceed $15 trillion. A $1 billion to $5 billion inflationary measure would add only .007 to .035 percentage points to the prevailing level of inflation. In general, measures contributing less than one-tenth of a percentage point to inflation are not considered significantly inflationary.

The costs and benefits of the conference agreement may also be analyzed with respect to both the interstate and intrastate markets. It should be emphasized that the economic impacts as projected by the model are highly aggregated. Although the model does distinguish between the interstate and the intrastate markets, it does not contain the detail necessary to break its results down into state level or regional level impacts, except to the extent that the intrastate market may be considered as broadly regional. Model results outlined below reflect projected impacts on the market system as a whole rather than on the individual states. Thus, to the extent that the characteristics of any particular state deviate from the norm for the market system as a whole due to State regulations, policies, or geographical circumstances, the model results must be carefully interpreted and qualified to reflect the impact of the specific characteristics on any given State. The model also does not analyze any relationships between the conference agreement and recent court decisions interpreting the Natural Gas Act which may potentially affect regional cost and benefit estimates.

The overall costs and benefits of the proposed legislation to specific regions or markets will be a function of changes in either supplies or prices of natural gas for those markets. Interstate markets, under either base case assumption, will benefit from the agreement because of increased supplies of gas available to interstate pipelines. And even though prices of natural gas to interstate consumers will rise in absolute terms, the price will remain below the delivered cost of alternate fuels. In this manner, the increased availability of gas to interstate consumers displaces higher priced fuels and thus reduced aggregate interstate energy costs. A preliminary estimate of the relative economic costs and benefits indicates that interstate consumers, in the aggregate, will pay $6 billion to $10 billion less for their energy between now and 1985 with the tentative agreement.

With respect to the intrastate market, the savings in cost of intrastate consumers are also estimated to be $6 billion if prices are assumed to rise in real terms under the status quo, as represented by the higher price base case. However, increased intrastate costs of $7 billion will result from the agreement if intrastate prices are assumed to rise no faster than inflation under the base case and if fuels substituting for any displaced natural gas are higher priced.

As has been pointed out earlier, predicting future intrastate prices under the status quo is extremely difficult. Over the next few years, the current intrastate surplus is apt to produce a depressing impact on intrastate prices. Over the slightly longer term, however, the price of unregulated intrastate gas under the status quo would be expected to

rise significantly toward the equivalent price of distillate oil or residual oil. Therefore, the most reasonable assessment of the impact of the agreement on intrastate markets is between the $7 billion cost to $6 billion benefit extreme points.

The $7 billion "worst case" cost estimate for the intrastate market also significantly exceeds the impact that can reasonably be expected to be attributed to the agreement for another reason. The $7 billion cost estimate is derived from the assumption that natural gas supplies will be displaced as a result of the agreement and that high-priced petroleum or imported natural gas will substitute for such displaced supplies. However, in large part, this intrastate fuel displacement will not result from the agreement but rather from independent investment commitments by utilities and regulatory actions by States aimed at significantly reducing boiler fuel use of natural gas by 1985. Consumer savings will result because much of the substitution will be directed toward coal rather than higher priced petroleum or natural gas.

In any case, intrastate consumers would benefit from an increase in State royalty and severance tax receipts and economic activity that would be stimulated by the conference agreement. These increased receipts will permit reductions in state and local income or property taxes.

Appendix

Model explanation

To measure the various economic impacts of different pricing policies, the model that serves as the basis for this analysis is divided into five sectors. The first sector consists of exogenous (externally specified) gas volumes and wellhead prices for each year between now and 1985. The other four sectors use these volumes and prices to calculate delivered residential prices, delivered industrial prices, aggregate consumer costs and producer revenues. The calculations used by the model can be modified to reflect the provisions of the policy that is to be analyzed. An explanation of the calculations used within the five sectors to measure the impacts of the conference agreement, relative to a continuation of the status quo, is given below.

Volumes and wellhead prices

The supply sector of the model reflects the generally held assumption that higher prices under the Agreement will result in increased reserve additions and, over time, increased gas production. Two alternate supply response scenarios can be analyzed. The first scenario assumes that additional production will be .01 Tcf in 1978 and will increase to 1.45 Tcf in 1985 (for a total supply response of about 6 Tcf), as increased prices spur exploration and discovery. This supply response reflects a long-run supply elasticity assumption of .02. The second scenario assumes a total supply response of 3 Tcf between now and 1985, and reflects a supply elasticity of 0.1. This range of supply elasticities extends well above and below the supply elasticity value of 0.13 computed by the Office of Technology Assessment in 1977.

Volumes of old gas are based on historical values declining at 7 to 8 percent per year. Volumes of gas from new wells reflect production of 10 percent of new reserves per year, based on the assumption that

the average life of a new reserve is about 10 years. Under the status quo, all gas from new reserves as of 1977 is considered new gas. Under the conference agreement, production from new reserves is divided into special developmental incentive gas and new gas. The proportion that is special developmental incentive (extension) gas declines from its present level of about 70 percent to 50 percent by 1985, as development of new reservoirs replaces development of existing reservoirs.

Under both scenarios, old gas under existing contracts is divided into the following categories: interstate contracts, intrastate contracts that are likely to be less than $1 per Mcf at time of rollover, and intrastate contracts that are likely to be greater than $1 per Mcf at time of rollover. The volume of gas in each category is initially set at its value as of 1977 and declines over time as production declines and contracts roll over to their respective categories. Interstate rollover rates are based on rollover profiles as contained in an appendix to FPC Opinion 699, and confirmed in data supplied to the Subcommittee on Energy and Power by the 10 largest interstate pipelines. Rollover rates for intrastate pipelines are assumed to be 8 percent per year for intrastate contracts below $1 and 10 percent per year for intrastate contracts above $13 reflecting the fact that more recently entered intrastate contracts are at higher prices, and are generally of shorter duration.

Production from new reserve additions is eligible for the same maximum lawful price whether sold in intrastate or interstate markets. The model contains the assumption that this gas will tend to be allocated primarily by demand. Thus, in accordance with present demand patterns, it is assumed that 60 percent of future discretionary production volumes will be committed to the interstate market and 40 percent will remain within the intrastate market. Under a continuation of the status quo, the proportions are a function of the relative interstate and intrastate prices, and result in a growing share of gas going to intrastate markets.

In determining wellhead prices under the Agreement, the model assumes that the prices will rise to the statutory ceiling price as applicable to the following categories of gas: new gas, special developmental incentive gas, interstate rollovers, and intrastate rollovers both below and above $1 at time of rollover. The prices for gas under the three categories of existing contracts (i.e., existing interstate, existing intrastate below $1 and existing intrastate above $1) are initially set at their present average values, which are 70 cents mmBtu, 37 cents/mmBtu and $1.74/mmBtu, respectively. Prices in real terms are assumed to remain constant under existing interstate contracts and intrastate contracts priced below $1 at time of rollover. The price under existing intrastate contracts priced above $1 at time of rollover, however, is assumed to increase to the new gas price over the next 4 years. Such contracts generally have indefinite price escalator clauses that allow the contract price to rise to the prevailing market price.

As discussed in the body of this analysis, the model assumes that, under a continuation of the status quo, both interstate and intrastate new gas prices would remain at their current levels of $1.48 per mmBtu and $1.82 per mmBtu, respectively.

Existing contract prices are assumed to be essentially the same under the status quo as under the Agreement, although intrastate contracts with indefinite price escalator clauses would be permitted to escalate to the new gas price under the Conference Agreement, whereas they are assumed to rise only to $1.82/mmBtu under the status quo. All intrastate rollover contracts are subject to these same assumptions.

Delivered residential prices

To determine delivered residential prices under a continuation of status quo, the model simply adds a transportation and distribution charge to the average wellhead price for the interstate and intrastate markets. The transportation and distribution charge is the sum of the existing average transportation and distribution charge and a variable component that reflects changes in overall future pipeline capacity utilization relative to utilization in 1977. The existing average transportation and distribution charge is assumed to be 60 cents per Mcf in the intrastate market and $1.60 per Mcf in the interstate market.

The calculation of delivered intrastate residential prices under the Agreement is the same as that under a continuation of the status quo: a transportation and distribution charge is added to the average intrastate wellhead price. In determining interstate residential prices, the incremental pricing provisions of the Agreement have been incorporated into the model. Prior to the "spillover point" at which industrial users reach Btu-equivalence with substitute fuels, the base price that is charged to residential customers (excluding transportation and distribution charges) is calculated as though all gas from new wells had a ceiling price of $1.48/mmBtu. The amount by which the actual price exceeds $1.48 is put into a separate account to be allocated to incrementally-priced users. After the industrial users have reached Btu-equivalency, an additional component is added to the base price charged to residential customers to reflect the allocation of any additional price increases to all users. Both before and after the spillover point, a transportation and distribution charge comparable to that under the status quo is added to the base price to determine the total delivered price to interstate residential customers.

Delivered industrial prices

Under a continuation of the status quo for both the interstate and the intrastate market and under the agreement for the intrastate market, the calculation of delivered industrial prices is similar to that of residential prices under the status quo: a transportation charge is added to the average wellhead price. The transportation charge reflects the existing average transportation charge (57 cents/mmBtu in the interstate market and 25 cents/mmBtu in the intrastate market) and changes due to variations in pipeline capacity utilization relative to the 1977 level of utilization.

In determining interstate industrial prices under the Agreement, the effects of incremental pricing are again measured. Before the point in time at which spillover is reached, the industrial user pays $1.48/mmBtu for any incrementally-priced supplies, plus his portion of the incremental surcharge account reflecting amounts attributable to price increases above $1.48, plus a transportation charge. After the delivered

price of natural gas to incrementally priced users reaches Btu-equivalence with the delivered price of substitute fuels, the industrial user pays that Btu-equivalent price, plus a component reflecting the allocation of any additional price increases to all users, under the assumption that such increases are rolled in to all users.

Through this formulation, the model can easily reflect the effects of incremental pricing on interstate industrial and residential consumers, and compare the resulting prices to those in the intrastate market as well as to prices under the status quo for each year between now and 1985.

Aggregate consumer costs

To determine aggregate consumer costs, the model examines the amount of gas available, the price at which it is available, the amount of alternative fuel that would be needed to supplement that gas to meet demands, and the price of the alternative fuel. From this information, the model computes aggregate consumer costs for both the interstate and the intrastate markets. As gas that would remain within the intrastate market under the status quo is sold instead into the interstate market under the Agreement, additional amounts of alternative fuels must be purchased by intrastate consumers. On the other hand, because the Conference agreement makes additional supplies available to the interstate market, the higher cost of an equivalent amount of alternative energy supply can be backed out of the calculation of aggregate interstate consumer costs. This substitute fuel credit in the interstate and the substitute fuel cost in the intrastate market is then combined to give a total aggregate consumer cost for the Nation as a whole.

Producer revenues

Total producer revenues are calculated simply as the product of the amount of gas that is sold and the average price at which it is sold. To compare producer revenues under the agreement with those under a continuation of the status quo, the model can operate under one of two options. Under the first option, the model calculates producer revenues for a fixed amount of gas. This option compares the additional revenues that producers would receive under the Agreement for a given amount of gas equal to volumes projected to be produced under the status quo. This measure of producer revenues separates the effect of higher prices (and the resulting inflationary impact on consumers) from the effect of increased revenues arising from added production. The conferees were interested in minimizing the former, inflationary, measure of their agreement. Revenues attributable to increased production need to be calculated separately in order to make this important distinction.

Under the second option, the model assumes a supply response and calculates the amount by which total producer revenues would increase as a result of higher prices and increased sales under the agreement.

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